UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND
OFFICE OF ECOSYSTEM PROTECTION
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES

NPDES PERMIT NO.: NH0100544

PUBLIC NOTICE START DATE: December 22, 2006

NAME AND ADDRESS OF APPLICANT:

Town of Sunapee, New Hampshire
Water and Sewer Commission
P.O. Box 347
Sunapee, NH 03782-0347

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Sunapee Wastewater Treatment Facility
Treatment Plant Road (Route 11)
Sunapee, NH 03782-0347

The municipality of New London is a co-permittee for specific activities required by the permit, as set forth in Section IV.H. of this Fact Sheet Sections I.B., I.C., & I.D. of the draft permit. The responsible municipal department is:

New London Sewer Commission
c/o Town of New London
P.O. Box 240
New London, NH 03257

RECEIVING WATER: Sugar River (Hydrologic Basin Code: 01080104)

CLASSIFICATION: Class B

I. PROPOSED ACTION, TYPE OF FACILITY, AND DISCHARGE LOCATION

The Town of Sunapee, NH has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit to discharge treated effluent into the Sugar River. The Sugar River is used for fishing, swimming, boating and other primary contact recreation.

The existing permit was issued on September 29, 1999 and expired on October 29, 2004. A timely reapplication was received in July 2004. The existing permit has been administratively continued

pursuant with 40 CFR 122.6(a)(1). This permit, after it becomes effective, will expire five (5) years from the effective date.
The Sunapee Wastewater Treatment Facility is a secondary wastewater treatment plant which is engaged in the collection and treatment of municipal wastewater. The treated effluent is discharged to the Sugar River (See Figure 1). The facility was built in 1972 with a design flow of 0.64 million gallons per day (mgd). The current monthly annual average flow is 0.40 mgd. The collection system is 100% separate sanitary sewer. The facility serves a population of 1200 in Sunapee and 2300 in New London.

The treatment process is as follows: Wastewater enters the facility via a 14-inch pipe, which is metered using an ultrasonic meter, passes through the headworks and into the grit removal channel, and then to the oxidation ditches. The ditches can be operated either in parallel or in a series; the latter is the standard operating procedure for the facility. Wastewater exits the second oxidation ditch and enters a splitter box and then flows into the two covered secondary clarifiers. Effluent from the clarifiers flows into a chlorine contact chamber, where sodium hypochlorite is added for disinfection. Effluent from the chlorine contact tank is dechlorinated using sodium bisulfate. The facility has recently switched from the use of chlorine gas to sodium hypochlorite. Both the chlorination and dechlorination systems are flow-paced.

The facility generates approximately 120,000 lbs of sludge per year. Currently, 100% of the sludge is transported to Concord, NH for disposal. On October 17, 2005, the facility installed “geotubes” for the dewatering of sludge on site.

II. DESCRIPTION OF THE DISCHARGE

A quantitative description of the significant effluent parameters based on recent discharge monitoring reports (DMRs) is shown in Attachments A.

III. LIMITATIONS AND CONDITIONS

Effluent limitations, monitoring requirements, and any implementation schedule (if required) are found in Part I of the Draft Permit. The basis for each limit and condition is discussed in Sections IV through VI of this Fact Sheet.

IV. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMITATION DERIVATION

A. General Statutory and Regulatory Background

Congress enacted the Clean Water Act (CWA or Act), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specified permitting sections of the Act, one of which is Section 402. See CWA §§ 301(a), 402(a). Section 402 establishes one of the CWA's principal permitting programs, the National Pollutant Discharge Elimination System (“NPDES”). Under this section of the Act, EPA may "issue a permit for the discharge of any pollutant, or combination of pollutants" in accordance with certain conditions. See CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. See CWA § 402(a)(1)-(2).

Section 301 of the CWA provides for two types of effluent limitations to be included in NPDES permits: "technology-based" limitations and "water quality-based" limitations. See CWA §§ 301, 303, 304(b); 40 CFR Parts 122, 125, 131. Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant-reducing technology available and economically achievable for the type of facility being permitted. See CWA § 301(b). As a class, POTWs must meet performance-based requirements based on available wastewater treatment technology. CWA § 301(b)(1)(B). The performance level for POTWs is referred to as "secondary treatment." Secondary treatment is comprised of technology-based requirements expressed in terms of BOD_5, TSS and pH. 40 C.F.R. Part 133.

Water quality-based effluent limits, on the other hand, are designed to ensure that state water quality standards are met regardless of the decision made with respect to technology and economics in establishing technology-based limitations. In particular, Section 301(b)(1)(C) requires achievement of, "any more stringent limitation, including those necessary to meet water quality standards...established pursuant to any State law or regulation..." See 40 C.F.R. §§ 122.4(d), 122.44(d)(1) (providing that a permit must contain effluent limits as necessary to protect state water quality standards, "including State narrative criteria for water quality") (emphasis added) and 122.44(d)(5) (providing in part that a permit incorporate any more stringent limits required by Section 301(b)(1)(C) of the CWA).

The CWA requires that states develop water quality standards for all water bodies within the state. CWA § 303. These standards have three parts: (1) one or more "designated uses" for each water body or water body segment in the state; (2) water quality "criteria," consisting of numerical concentration levels and/or narrative statements specifying the amounts of various pollutants that may be present in each water body without impairing the designated uses of that water body; and (3) an antidegradation provision, focused on protecting high quality waters and protecting and maintaining water quality necessary to protect existing uses. CWA § 303(c)(2)(A); 40 C.F.R. § 131.12. The limits and conditions of the permit reflect the goal of the CWA and EPA to achieve and then to maintain water quality standards.

The applicable New Hampshire water quality standards can be found in Surface Water Quality Regulations, Chapter Env-Ws 1700 et seq. See generally, Title 50, Water Management And Protection, Chapter 485A, Water Pollution and Waste Disposal Section 485-A. Hereinafter, New Hampshire's Surface Water Quality Regulations are referred to as the NH Standards.

Receiving stream requirements are established according to numerical and narrative standards adopted under state law for each stream classification. When using chemical-specific numeric criteria from the state's water quality standards to develop permit limits, both the acute and chronic aquatic life criteria are used and expressed in terms of maximum allowable instream pollutant concentrations. Acute aquatic life criteria are generally implemented through maximum daily limits and chronic aquatic life criteria are generally implemented through average monthly limits. Where a State has not established a numeric water quality criterion for a specific chemical pollutant that is present in the effluent in a concentration that causes or has a reasonable potential to cause a violation of narrative water quality standards, the permitting authority must establish effluent limits in one of three ways: based on a "calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use"; on a "case-by-case basis" using CWA Section 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, in certain circumstances, based on an "indicator parameter." 40 CFR § 122.44(d)(1)(vi)(A-C).

All statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired. When technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. See 40 CFR § 125.3(a)(1). Compliance schedules and deadlines not in accordance with the statutory provisions of the CWA cannot be authorized by an NPDES permit.The regulations governing EPA's NPDES permit program are generally found in 40 CFR Parts 122, 124, 125 and 136.

B. Development of Water Quality-based Limits

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic and whole effluent toxicity) that is or may be discharged at a level that causes or has "reasonable potential" to cause or contribute to an excursion above any water quality standard, including narrative water quality criteria. See 40 CFR §122.44(d)(1). An excursion occurs if the projected or actual in-stream concentration exceeds the applicable criterion.

Reasonable Potential

In determining reasonable potential, EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and receiving water as determined from permit application, monthly discharge monitoring reports (DMRs), and State and Federal water quality reports; (3) sensitivity of the species to toxicity testing; (4) statistical approach outlined in Technical Support Document for Water Quality-based Toxics Controls, March 1991, EPA/505/2-90-001 in Section 3; and, where appropriate, (5) dilution of the effluent in the receiving water. In accordance with New Hampshire Standards (RSA 485-A:8,VI, Env-Ws 1705.02), available dilution for rivers and streams is based on a known or estimated value of the lowest average flow which occurs for seven (7) consecutive days with a recurrence interval of once in ten (10) years (7Q10) for aquatic life and human health criteria for non-carcinogens, or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water at the point just upstream of the outfall. Furthermore, 10 percent (%) of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Ws 1705.01.

Anti-Backsliding

Section 402(o) of the CWA generally provides that the effluent limitations of a renewed, reissued, or modified permit must be at least as stringent as the comparable effluent limitations in the previous permit. Unless certain limited exceptions are met, “backsliding” from effluent limitations contained in previously issued permits is prohibited. EPA has also promulgated anti-backsliding regulations, which are found at 40 CFR § 122.44(l). Unless applicable anti-backsliding requirements are met, the limits and conditions in the reissued permit must be at least as stringent as those in the previous permit.

State Certification

Section 401(a)(1) of the CWA requires all NPDES permit applicants to obtain a certification from the appropriate state agency stating that the permit will comply with all applicable federal effluent limitations and state water quality standards. See CWA § 401(a)(1). The regulatory provisions pertaining to state certification provide that EPA may not issue a permit until a certification is granted or waived by the state in which the discharge originates. 40 C.F.R. § 124.53(a). The regulations further provide that, "when certification is required....no final permit shall be issued...unless the final permit incorporates the requirements specified in the certification under § 124.53(e)." 40 CFR. § 124.55(a)(2). Section 124.53(e) in turn provides that the State certification shall include "any conditions more stringent than those in the draft permit which the State finds necessary” to assure

compliance with, among other things, state water quality standards, see 40 CFR. § 124.53(e)(2), and shall also include "[a] statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law, including water quality standards," see 40 C.F.R.§ 124.53(e)(3).

However, when EPA reasonably believes that a state water quality standard requires a more stringent permit limitation than that reflected in a state certification, it has an independent duty under CWA § 301(b)(1)(C) to include more stringent permit limitations. See 40 C.F.R. §§ 122.44(d)(1) and (5). It should be noted that under CWA § 401, EPA's duty to defer to considerations of state law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by state law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 CFR § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." Id. EPA regulations pertaining to permit limits based upon water quality standards and state requirements are contained in 40 CFR § 122.4 (d) and 40 CFR § 122.44(d).

C. Development of Water Quality-based Effluent Limitations for Impaired Waters

The State of New Hampshire's 2004 303(d) list of impaired waters identifies surface waters which do not currently meet state water quality standards (NHDES 2004). Segments of the Sugar River from Sunapee to Claremont have been identified as violating water quality standards. The segment (NHRIV801060405-10) immediately downstream of the Sunapee WWTF discharge has been identified as violating water quality standards for Dissolved Oxygen (DO), pH, Escherichia coli and mercury. States are required to prepare Total Maximum Daily Load (TMDL) analyses for receiving waters listed on the 303(d) list. A TMDL is a scientific analysis which identifies the amount of a pollutant from point, nonpoint and background sources that may be discharged to a water quality-limited receiving water. Any pollutant loading above the TMDL will result in violation of the applicable water quality standards. The US EPA and the State of New Hampshire have completed the sampling necessary to perform a TMDL on segments of the Sugar River from the Sunapee Wastewater Treatment Facility to the Claremont Wastewater Treatment Plant, but NHDES does not anticipate completing the TMDL until 2008. Although it is EPA's understanding that the TMDL will contain an allocation for phosphorus, EPA believes that it is reasonable to move forward with a water quality-based phosphorus effluent limitation in light of the existing impairment of the receiving water, which is exhibiting cultural eutrophication. As discussed below, effluent discharges from the Sunapee WWTF result in phosphorus loading to such waters.

In the absence of a TMDL, EPA is required to use available information to establish water quality limits when issuing NPDES permits to impaired waters. See generally 40 CFR §122.44 (d). EPA has used the data collected by NHDES for the TMDL, and has established water quality-based limits for total phosphorous using this data, applicable narrative state water quality standards, federal water quality criteria guidance and other relevant information discussed in the "Nutrients" section below. The EPA believes that the proposed limits represent the minimum levels of control necessary to achieve water quality standards.

While the permit will be issued for the normal five year term, it can be reopened and modified during its term under certain circumstances. A permit may be modified or revoked and reissued in accordance with 40 CFR § 122.62(a) (Causes for modification) or (b) (Causes for modification or revocation and reissuance). One basis for reopening and modifying the permit during its term is the receipt of information that was not available at the time of permit issuance and that would have justified application of different permit conditions ("New Information"). See 40 CFR §122.62(a)(2).

New Information may include, but is not limited to, an applicable final Total Maximum Daily Load ("TMDL"); other relevant water quality data or studies provided by any party; and the results of ESA Section 7 consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service. In addition to constituting New Information, the outcome of the ESA Section 7 consultation may also satisfy the requirements of 40 CFR § 122.62(b)(1). A reopener provision reflecting the foregoing has been added to the permit.

Any modified permit resulting from the reopener must be consistent with applicable anti-backsliding provisions. See e.g., CWA §§ 402(o)(1); 303(d)(4)(A)(i); 402(o)(2)(B) (and final paragraph); 40 CFR § 122.44(l).

D. Flow

The design flow rate of 0.64 MGD is used to calculate the mass and concentration limits for Five-Day Biochemical Oxygen Demand (BOD_5) and Total Suspended Solids (TSS), as discussed below.

Influent and effluent flow must be continuously monitored. If the effluent discharged for a period of three consecutive months exceeds 80 percent of the 0.64 MGD design flow (0.51 MGD), the permittee must notify EPA and NHDES-WD, and implement a program for maintaining satisfactory treatment levels. See Part I.A.6 of the proposed Draft Permit.

E. Conventional Pollutants

Under Section 301(b) (1) (B) of the CWA Publicly Owned Treatment Works (POTWs) must have achieved effluent limitations based on secondary treatment by July 1, 1977. The secondary treatment requirements are set forth at 40 CFR Part 133. Effluent limitations for monthly and weekly BOD_5 and TSS are based on requirements under Section 301 (b)(1)(B) of the CWA and 40 CFR 133.102. The limits for Escherichia coli (E. coli) bacteria as well as the pH range are based upon State Certification requirements for POTWs under Section 401(d) of the CWA, 40 CFR §§ 124.53 and 124.55, and water quality considerations.

Biological Oxygen Demand (BOD_5) and Total Suspended Solids (TSS)

A review of DMR data submitted over the last 24 months shows that there have not been any permit violations for BOD_5 and TSS. Based on the DMR data, the average values for BOD_5 monthly average, weekly average and maximum daily were 8.02 mg/l (range 3.9-12.4 mg/l; n=23), 10.58 mg/l (5-16 mg/l; n=23) and 12.56 (5-18 mg/l; n=23), respectively. These values are well below the respective permit limits of 30 mg/l, 45 mg/l and 50 mg/l.

The average TSS values monthly average, weekly average and maximum daily over the last 24 months were 9.6 mg/l (3.6-58.6 mg/l; n= 23), 9.7 mg/l (4.5-17 mg/l; n=23), 13.2 mg/l (5-30 mg/l; n=23), respectively.

BOD_5 and TSS Loading Calculations

The regulation at 40 CFR §122.45(f) requires the EPA to apply the Secondary Treatment Standards (concentration-based) as mass based limits. The average monthly, average weekly and maximum daily allowable mass-based (load) limitations for BOD_5 and TSS shown in the draft permit are based on the POTW's average daily design flow of 0.64 MGD and the appropriate constituent concentration for the respective time period being limited.

Calculations of the maximum allowable loads for average monthly BOD_5 and TSS are based on the following equation.

$$L=C*Q_{PDF}*8.345$$

where:

L = Maximum allowable load, in lbs./days, rounded to nearest 1 lbs./day.
C = Maximum allowable effluent concentration for average monthly reporting period, in mg/l.
Q_{PDF} = Treatment plant's design flow, in MGD.
8.45 = Factor to convert effluent concentration, in mg/l, and plant design flow, in MGD, to lbs./day.

BOD_5 Average Monthly and Average Weekly Limits

[30] (Concentration limit) X 0.64 (design flow) X 8.345 (Conversion Factor) = 160.22; rounded to 160 lbs/day

[45] (Concentration limit) X 0.64 (design flow) X 8.345 (Conversion Factor) = 240.34; rounded to 240 lbs/day

[50] (Concentration limit) X 0.64 (design flow) X 8.345 (Conversion Factor) = 267.04; rounded to 267 lbs/day

TSS Average Monthly and Average Weekly Limits

[30] (Concentration limit) X 0.64 (design flow) X 8.345 (Conversion Factor) = 160.22; rounded to 160 lbs/day

[45] (Concentration limit) X 0.64 (design flow) X 8.345 (Conversion Factor) = 240.34; rounded to 240 lbs/day

[50] (Concentration limit) X 0.64 (design flow) X 8.345 (Conversion Factor) = 267.04; rounded to 267 lbs/day

All the concentration and mass-based effluent limits for BOD_5 and TSS in the draft permit are the same as the limits in the current permit, and therefore, are in accordance with antibacksliding requirements found in 40 CFR §122.44(l). The permittee has been able to achieve consistent compliance with those limits (See Table 1).

Percent removal limits for BOD_5 and of TSS is required under 40 CFR § 133.102 (a)(3) and (b)(3), respectively, and are the same as the limits in the current permit, and therefore are in accordance with the antibacksliding requirements found in 40 CFR §122.44.

Consistent with the July 19, 1999, EPA/NHDES-WD Effluent Monitoring Guidance, the monitoring frequency for BOD_5 and TSS is twice (2) per week in the draft permit.

pH Limits

The limit for pH is based upon State Certification Requirements and RSA 485-A:8, which states that "The pH range for said (Class B) waters shall be 6.5 to 8.0 except when due to natural causes." The effluent limitation for pH in the draft permit is the same as the limit in the existing permit, and therefore, are in accordance with antibacksliding requirements found in 40 CFR §122.44(1). The permittee has been able to achieve compliance with that limit with the exception of July and August of 2004. The pH values over the last 24 months ranged from 6.3 to 7.9 S.U. with an average minimum of 6.5 and an average maximum value of 7.0.

Escherichia coli Bacteria (E.Coli)

The limits for E. Coli bacteria are based on requirements in the State's Statutes (N.H. RSA 485-A:8) for non-designated beach area. The average monthly limit is 126 colonies per 100 milliliters (126 col/100 ml) and the maximum daily limit is 406 col/100 ml. Over the last 24 months, the average E. Coli values monthly average and maximum daily over the last 24 months were 27.6 colonies/100 ml (0-102.3; n= 23), and 103.4 colonies/100 ml (7-367; n=23), respectively.

Consistent with the July 19, 1999, EPA/NHDES-WD Effluent Monitoring Guidance, the compliance monitoring frequency for E. Coli and pH in the draft permit is 3/Week and 1/ Day, respectively. Samples for E. Coli compliance monitoring must be taken concurrently with samples for total residual chlorine.

F. Nonconventional and Toxic Pollutants

Water quality based limits for specific toxic pollutants such as chlorine, ammonia, metals, etc. are determined from specific numeric criteria derived from extensive scientific studies. The specific toxic pollutants and their associated toxicity criteria are popularly known as the "Gold Book criteria" which EPA summarized and published in Quality Criteria for Water, 1986, EPA 440/5-86-001 (as amended).

The State of New Hampshire adopted EPA's numerical criteria known as the "Gold Book Criteria" with certain exceptions, and included them as a part of the State's Surface Water Quality Regulations, Env-WS Chapter 1700, (the Water Quality Regulations) effective on December 10, 1999. EPA New England uses these pollutant specific criteria, along with available dilution in the receiving water, to determine a specific pollutant's draft permit limit.

Available Dilution

Water quality based limitations are established with the use of a calculated available dilution. In accordance with the Water Quality Regulations, (Env-Ws 1705) available dilution for discharges to freshwater receiving waters is based on a known or estimated value of the annual seven (7) consecutive-day mean low flow at the 10-year recurrence interval (7Q10) for aquatic life or the long-term harmonic mean flow for human health (carcinogens only) in the receiving water at the point just upstream of the discharge. Furthermore, 10 percent (%) of the receiving water's assimilative capacity is held in reserve for future needs in accordance with New Hampshire's Surface Water Quality Regulations Env-Ws 1705.01.

The Sunapee WWTF is located downstream from Lake Sunapee. There are two gaging locations in the Sugar River Watershed. NHDES maintains a gage at the outlet of Lake Sunapee (Lake Sunapee Dam) and the US Geological Survey operates the West Claremont Gage (01152500). As part of its efforts to prepare a TMDL for the Sugar River, NHDES calculated 7Q10 values upstream of each NPDES discharge to the River. These calculations are shown in detail in a report titled "Sugar River

7Q10 Calculation Summary" dated April 28, 2006. The following is a short description of the methodology used by NHDES to calculate the 7Q10 low flow just upstream of the Sunapee discharge.

NHDES first calculated the 7Q10 values for each of the flow gages using Log-Pearson Type III statistics. The 7Q10 flow at the USGS West Claremont gage for the period of record (1929-2001) was calculated to be 37.23 cfs. The 7Q10 value at the Lake Sunapee Dam for the period of record of 1982 to 2002 was calculated to be 6.62 cfs. Gage records for the years 1983 and 1984 were excluded due to extreme low flows caused by a construction project at the Lake Sunapee Dam. According to NHDES, such extreme low flows are not anticipated in the future. The summer discharge over the Sunapee Dam is now maintained at a minimum of 7 cfs per operation and maintenance requirements, so the 7Q10 has been set at 7.0 cfs

NHDES then calculated the 7Q10 flow contributed from the watershed area between the two gaging locations as 30.23 cfs by subtracting the flows at the two gages. The amount of this flow entering the River between the Sunapee gage and the Sunapee discharge was then calculated using the Dingman Equation, a regression-based equation which estimates flow from a watershed area as a function of watershed area, basin elevation, and percent of watershed area underlain by coarse sand and gravel deposits in contact with streams. The Dingman calculations resulted in a determination that only about 0.6 percent, or 0.19 cfs of the total flow entering the watershed downstream of the Sunapee gage was entering between the Sunapee gage and the Sunapee POTW discharge. Therefore, the 7Q10 at the Sunapee discharge was calculated to be 7.19 cfs (7 + 0.19). This 7Q10 is almost exactly the same as the 7Q10 used in the existing permit.

The design flow for the Sunapee WWTF is 640,000 gallons per day (0.64 mgd) or 0.99 cubic feet per second (cfs). The dilution factor is therefore calculated as 7.44 as shown below.

$$\text{Dilution Factor} = \frac{(Q_{001}) + (Q_{PDF} * 1.547) * 0.90}{(Q_{PDF} * 1.547)}$$

where:

Q_{001} = Estimated 7Q10 flow at Outfall 001, in CFS
0.90 = Factor to reserve 10% assimilative capacity.
Q_{PDF} = Treatment plant's design flow, in MGD.
1.547 = Factor to convert MGD to CFS.

$$\frac{(7.19\text{cfs}) + (0.64\text{ mgd} * 1.547) * 0.90}{(0.64\text{ mgd} * 1.547)}$$

$$(7.19 + .99 / .99) * 0.90$$

$$8.26 * 0.90$$

$$\text{Dilution Factor} = 7.44$$

Total Residual Chlorine

The draft permit includes Total Residual Chlorine (TRC) limitations which are based on state water quality standards [New Hampshire Water Quality Regulations, Chapter 1700, Table 1703]. Chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. DMRs

show chlorine residual levels below the minimum detection level for the past 24 months (See Table 1). The average TRC values monthly average and maximum daily over the last 24 months were 0 mg/l (0-0 mg/l; n= 23), and 0.037 mg/l (0-0.14 mg/l; n=23), respectively.

The water quality standards for chlorine defined in the 2002 EPA National Recommended Water Quality Criteria for freshwater are 19 ug/l acute, and 11 ug/l chronic, in the receiving water. Given the dilution of 7.44, TRC limits have been calculated as 0.141 mg/l maximum daily and 0.082 mg/l average monthly. TRC samples shall be collected once per day (1). One sample per week shall be collected concurrent with the weekly E.Coli. bacteria sample. These limits are the same as those in the previous permit.

(acute criteria * dilution factor) = Acute (Maximum Daily)
(19 ug/l x 7.44)= 141.36 ug/l = 0.141 mg/l

(chronic criteria * dilution factor) = Chronic (Monthly Average)
(11 ug/l x 7.44) = 81.84 ug/l = 0.082 mg/l

Oil and Grease

The previous permit included an effluent limit of 15 mg/l for oil and grease with a monitoring frequency of once per quarter. In order to supplement the quarterly sampling data, the permittee was required to conduct weekly visual observations of the clarifiers for oil and grease. If, a sheen was observed, then the permittee was required to take a grab sample. During the first quarter of 2003, the permittee reported an oil and grease value of 43.4 mg/l. Although there have been no exceedances of the limits, since Quarter 1 of 2003, the requirements of the previous permit have been maintained in the draft permit.

Ammonia as Nitrogen

Elevated ammonia levels present two distinct environmental threats. First, short-term acute effects of high levels of ammonia will cause death of aquatic organisms. Long-term chronic effects of an elevated average ammonia levels will cause reproductive or growth difficulties. Secondly, high levels of ammonia can catalyze the growth of nitrifying bacteria. Nitrification caused by the bacteria breaks down ammonia and combines the freed nitrogen with oxygen to produce nitrites which are further metabolized by bacteria to nitrates. If the WWTP's effluent is discharged with high ammonia levels, the nitrification induced by the ammonia can cause the dissolved oxygen levels of the receiving water to drop because oxygen is taken out of solution from the receiving water to form the nitrogen compounds. For example, the oxygen required to oxidize ammonia is approximately 4.3 mg oxygen/mg ammonium-nitrogen (Metcalf & Eddy, 1991).

The existing permit requires the permittee to monitor ammonia twice per week from June 1 through October 31. From 2004 to 2006, the average monthly concentration for ammonia in the effluent ranged from 0.35 mg/l to 13.9 mg/l. Monitoring during the winter months (November 1 through May 31) is required as part of the Whole Effluent Toxicity testing. Monitoring conducted between 2004-2006 ranges from 0.17-22 mg/l.

The aquatic life criteria for ammonia are based on 1703.25 in the New Hampshire Surface Water Quality Regulations and a pH of 7.0 SU and temperatures of 25 degrees Celsius (Summer) and 10 degrees Celsius (Winter). Chronic criterion applies to average monthly periods, while acute criterion applies to maximum daily periods. Multiplying the appropriate criterion by the dilution factor of 7.44 yields the following limits:

Summer
(acute criteria * dilution factor) = Acute (Maximum Daily)
(24.1 ug/l x 7.44) = 179.3 mg/l

(chronic criteria * dilution factor) = Chronic (Monthly Average)
(3.21 ug/l x 7.44) = 23.8 mg/l

Winter
(acute criteria * dilution factor) = Acute (Maximum Daily)
(24.1 ug/l x 7.44) = 179.3 mg/l

(chronic criteria * dilution factor) = Chronic (Monthly Average)
(5.91 ug/l * 7.44) = 43.97 mg/l

Based on the recent DMR data, there is no reasonable potential for an exceedance of the water quality criteria for ammonia and therefore, limits are not proposed in the draft permit. However, given the downstream impairment for dissolved oxygen, the requirement to monitor and report ammonia concentration remains a requirement of the proposed permit but the sampling frequency has been reduced to twice per month from twice per week June 1 through October 31.

Total Phosphorus

Phosphorus and other nutrients (i.e. nitrogen) promote the growth of nuisance algae and rooted aquatic plants. Typically, elevated levels of nutrients will cause excessive algal and/or plant growth resulting in reduced water clarity and poor aesthetic quality. Also, through respiration and the decomposition of dead plant matter excessive algae and plant growth can reduce in-stream dissolved oxygen concentrations to levels that could negatively impact aquatic life and/or produce strong, unpleasant odors.

EPA has produced several guidance documents which contain recommended total phosphorus criteria for receiving waters. The 1986 Quality Criteria of Water (the "Gold Book") recommends in-stream phosphorus concentrations of 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impoundments, and 0.025 within the lake or reservoir.

In December 2000, EPA released "Ecoregional Nutrient Criteria" (USEPA 2000) as part of an effort to reduce problems associated with excess nutrients in water bodies located within specific areas of the country. The published criteria represent conditions in waters within each specific ecoregion which are minimally impacted by human activities and thus are representative of waters without cultural eutrophication. Sunapee is within Ecoregion XIII, Nutrient-Poor, Largely Glaciated Upper Midwest and Northeast. Recommended criteria for this ecoregion are a total phosphorus criteria of 10 ug/l (0.01 mg/l) and a chlorophyll a criteria of 0.63 ug/l (0.00063 mg/l). These recommended criteria are found in the Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Nutrient Ecoregion XIII (USEPA 2001).

More recently, Mitchell, Liebman, Ramseyer, and Card (in draft 2004), in conjunction with the New England states, developed potential nutrient criteria for rivers and streams in New England. Using several river examples representative of typical conditions for New England streams and rivers, they investigated several approaches for the development of river and stream nutrient criteria that would be dually protective of designated uses in both upstream reaches and downstream impoundments. Based on this investigation an instream total phosphorus concentration of 20 – 22 ug/l (0.020 – 0.022

mg/l) was identified as protective of designated uses for New England rivers and streams. The development of this New England-wide total phosphorus concentration was based on more recent data than the National Ecoregional nutrient criteria and has been subject to quality assurance measures. Additionally, the development of the New England-wide concentration included reference conditions for waters presumed to be protective of designated uses.

The New Hampshire Surface Water Quality Regulations contain narrative criteria which states phosphorus contained in an effluent shall not impair a water body's designated use. Specifically, New Hampshire Surface Water Quality Regulations, Chapter Env-Ws 1703.14(b) states that, "Class B waters shall contain no phosphorus or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring." Env-Ws 1703.14(c) further states that, "Existing discharges containing either phosphorus or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards." Cultural eutrophication is defined in Env-Ws 1702.15 as, "…the human-induced addition of wastes containing nutrients which results in excessive plant growth and/or decrease in dissolved oxygen." Although numeric nutrient criteria have not yet been developed in New Hampshire, a total phosphorus concentration of 0.05 mg/l is considered as a level of concern for the NHDES (NHVRAP & NHDES 2002, 2003, and 2005)

Section 303(d) of the CWA requires states to identify those water bodies that are not expected to meet surface water quality standards after the implementation of technology-based controls and, as such, require the development of total maximum daily loads (TMDLs). New Hampshire's Final 2004 List of Threatened or Impaired Water That Require a TMDL (NHDES 2004) lists segments of the Sugar River as not meeting standards for dissolved oxygen. Consequently, the NHDES-WD is currently preparing a TMDL for the Sugar River which is currently scheduled to be completed in 2008. Sampling for this TMDL was performed in the summer of 2001 with supplemental sampling conducted in August 2004 (Note: total phosphorus results for August 2004 did not meet the QA/QC requirements, and therefore, are not used in this analysis). A summary of pertinent monitoring data and daily average streamflow are summarized below. A map showing the sampling locations is shown in Attachment E. The daily average flow values were measured at the USGS West Claremont Gage (01152500). The receiving water flow was lowest during the August 2001 sampling event, however, the flow at that time was still 1.6 times higher than the 7Q10 flow of 37.23 cfs. Therefore, the data do not represent the permitting worst case scenario conditions of 7Q10 flows.

Sample Location	Sampling Date 8/21/2001 Daily Average Flow = 60 cfs		Sampling Date 9/24/2001 Daily Average Flow = 74 cfs	
	Chlorophyll A[1]	Total P[2]	Chlorophyll A[1]	Total P[2]
17A	16.1	ND	ND	ND
17C				
Sunapee WWTF	ND	5.1	ND	5.6
17S				
17R	15.1	0.12	9.7	0.14
1-TRA	18.4	0.01	ND	0.01
15A	17.9	0.07	ND	0.08
15C	24	0.07	7.9	0.09
Dorr Woolen	0.89	ND	10.9	0.76
1-LPD	24	0.01	7.3	0.01
14B	29.9	0.05	11.2	0.07
13	29.9	0.07	7.3	0.08
1-SSR1	17.7	0.02	ND	ND
11A	24	0.04	ND	0.05
11B				
Newport WWTF	237	3.3	---	---
9R	26.6	0.11	7.5	0.05
1-NSR	16.1	ND	7.4	0.01
9C				
9	ND	0.06	10.1	0.04
7	15.8	0.06	7.6	0.03
6A	ND	0.05	7	0.03
6B	17.1	0.03	ND	0.03
5A	0.02	ND	ND	0.06

[1] Units for Chlorophyll "A" are micrograms per liter (ug/l).
[2] Units for Total Phosphorus are milligrams per liter (mg/l).

Data from the sampling rounds show that the Sunapee WWTF is discharging substantial concentrations of total phosphorous to the Sugar River. At 7Q10 conditions, these concentrations (5.1 /7.44=0.68; 5.6/7.44=0.75 mg/l) are higher than the Gold Book recommended instream phosphorus concentration of 0.1 mg/l, and considerably higher than the ecoregional instream phosphorus concentration of 0.01 mg/l.

The chlorophyll a samples collected downstream of the Sunapee WWTF in August 2001 show increasing concentrations of chlorophyll a (17.9 ug/l and 24 ug/l) downstream even though the dilution continues to increase. There is a tributary (Trask Brook, 1-TRA) which enters the Sugar River just upstream of these sites which had a chlorophyll concentration of 18.4 ug/l. However, the tributary does not significantly contribute to the high concentrations of chlorophyll a downstream because the tributary flow represents less than 15% of the total river flow.

During the August 2004 sampling event, EPA sampled the additional parameter of periphyton biomass and used additional methods for quantifying chlorophyll a. Results from that sampling show that the periphyton biomass levels in the Sugar River exceed those levels determined to be associated with potential impairment. A report entitled The Relationship Between Nutrient Concentration and Periphyton Levels in River and Streams – A Review of the Scientific Literature, was completed in August 2002 for New England Interstate Water Pollution Control Commission (NEIWPCC). The report concluded that current research indicates that periphyton biomass levels between 50-200 mg/m2 represent nuisiance conditions. Levels downstream of the Sunapee WWTF, but upstream from other active discharges far exceed the recognized nuisance levels.

Sample Location	Chlor-a (mg/m^2)
13	269.5
11A	865.9

Based on the above information, a total phosphorus limit of 0.75 mg/l has been included in the draft permit. The permit limit is based upon the Gold Book recommended instream concentration of 0.1 mg/l and is an average monthly limit applicable from April 1 through October 31 of each year. The phosphorus limit calculations are shown below.

$$C_{WWTF} = \frac{(Q_{7Q10}(0.9) + Q_{WWTF})(0.1) - (Q_{7Q10})(0)}{Q_{WWTF}}$$

Where:

C_{WWTF} = Necessary phosphorus concentration in the plant effluent to meet the instream criteria.
Q_{7Q10} = 7Q10 flow of the Sugar River just upstream of the plant discharge = 7.19 cfs
Q_{WWTF} = Design flow of the treatment plant = 0.64 mgd = 0.99 cfs
0.9 = Factor to reserve 10% assimilative capacity
0.1 = Instream phosphorus criteria in mg/l.
0 = Upstream phosphorus concentration in mg/l.

$$C_{WWTF} = \frac{[7.19(0.9) + 0.99]*(0.1) - (7.19)*(0)}{0.99}$$

C_{WWTF} = 0.75 mg/l

The Gold Book criteria for phosphorus, as opposed to the more stringent ecoregional criteria, was used given that it was developed from an effects based approach versus the ecoregional criteria that were developed on the basis of reference conditions. The effects based approach is taken because it is often more directly associated with an impairment to a designated use (i.e. fishing, swimming). The effects based approach provides a threshold value above which adverse effects (i.e. water quality impairments) are likely to occur. It applies empirical observations of a causal variable (i.e. phosphorus) and a response variable (i.e. chlorophyll a) associated with designated use impairments. Reference based values are statistically derived from a comparison within a population of rivers in the same ecoregional class. They are a quantitative set of river characteristics (physical, chemical, and biological) that represent minimally impacted conditions.

In addition to the seasonal total phosphorus limit of 0.75 mg/l, the permit contains a winter period total phosphorus limit of 1.0 mg/l from November 1 through March 31 of each year. The winter period limitation on total phosphorus is necessary to ensure that the higher levels of phosphorus discharged in the winter do not result in the accumulation of phosphorus in downstream sediments. The limitation assumes that the vast majority of the phosphorus discharged will be in the dissolved fraction and that dissolved phosphorus will pass through the system during the winter period.

Metals

The previous permit required the permittee to submit quarterly effluent data for total recoverable nickel, total recoverable zinc, total recoverable aluminum, total recoverable cadmium, total recoverable lead, total recoverable chromium and total recoverable copper (See Table 2). EPA has evaluated the reasonable potential for each of these pollutants to exceed the applicable water quality criteria and determined that limits are not required for nickel, zinc, aluminum or chromium.

Total Recoverable Cadmium

The water quality criteria for total recoverable cadmium for an effluent with a dilution factor of 7.44 and a hardness of 25 mg/l are a maximum daily limit of 3.9 ug/l and a monthly average limit of 0.7 ug/l. The maximum daily value of total recoverable cadmium reported over the last two years is 1 ug/l. This value exceeds the monthly average limit of 0.7 ug/l, and therefore, the above limits have been included in the draft permit.

Water Quality Criteria for hardness-dependent metals:

Acute criteria (dissolved) = $\exp\{ m_a [\ln(\text{hardness})] + b_a \}$ (CF)
m_a = pollutant specific coefficient
b_a = pollutant specific coefficient
h = hardness
ln = natural logarithm
CF = pollutant specific conversion factor used to convert total recoverable to dissolved metal
Calculation of acute limit for cadmium:

$m_a = 1.0166$ $b_a = -3.924$ CF = 1.002 h = 25

Acute criteria (dissolved) = exp {1.0166 [ln (25)] + -3.924} * (01.002) = 0.52 ug/l
Dilution factor = 7.44
Effluent limitation for dissolved cadmium =7.44 * 0.52 ug/l = 3.87ug/l
Effluent limitation for total recoverable cadmium = 3.87/1.002 = 3.86 ug/l*

The maximum daily water quality based limitation for total recoverable cadmium is 3.9 ug/l

Chronic criteria (dissolved) = $\exp\{ m_c [\ln(\text{hardness})] + b_c \}$ (CF)
m_c = pollutant specific coefficient
b_c = pollutant specific coefficient
h = hardness
ln = natural logarithm
CF = pollutant specific conversion factor used to convert total recoverable to dissolved metal
Calculation of chronic limit for cadmium:

$m_c = 0.7409$ $b_c = -4.715$ CF = 0.967 h = 25

Chronic criteria (dissolved) = exp {0.7409 [ln (25)] + -4.715} * (0.967) = 0.09 ug/l
Dilution factor = 7.44
Effluent limitation for dissolved cadmium = 7.44 * 0.09 ug/l = 0.67 ug/l
Effluent limitation for total recoverable cadmium = 0.67/0.96 = 0.69 ug/l*

The monthly average water quality based limitation for total recoverable cadmium is 0.7 ug/l.

Total Recoverable Lead

The water quality data for total recoverable lead for an effluent with a dilution factor of 7.44 and a hardness of 25 mg/l are a maximum daily limit of 104 ug/l and a monthly average limit of 4 ug/l. Over the last 2 years, the maximum daily value of total recoverable lead reported was 5.0 ug/l. This value exceeds the calculated monthly average limit of 4ug/l and therefore the above limits have been included in the draft permit.

Water Quality Criteria for hardness-dependent metals:

Acute criteria (dissolved) = exp{ m_a [ln(hardness)] + b_a } (CF)
m_a = pollutant specific coefficient
b_a = pollutant specific coefficient
h = hardness
ln = natural logarithm
CF = pollutant specific conversion factor used to convert total recoverable to dissolved metal
Calculation of acute limit for lead:

m_a = 1.273 b_a = -1.46 CF = 0.993 h = 25

Acute criteria (dissolved) = exp {1.273 [ln (25)] + -1.46} * (0.960) = 13.88 ug/l
Dilution factor = 7.44
Effluent limitation for dissolved lead = 7.44 * 13.88 ug/l = 103.27 ug/l
Effluent limitation for total recoverable lead = 103.27/0.993 = 103.99 ug/l*

The maximum daily water quality based limitation for total recoverable lead is 104 ug/l

Chronic criteria (dissolved) = exp{ m_c [ln(hardness)] + b_c } (CF)
m_c = pollutant specific coefficient
b_c = pollutant specific coefficient
h = hardness
ln = natural logarithm
CF = pollutant specific conversion factor used to convert total recoverable to dissolved metal
Calculation of chronic limit for lead:

m_c = 1.273 b_c = -4.705 CF = 0.993 h = 25

Chronic criteria (dissolved) = exp {1.273 [ln (25)] + -4.705} * (0.993) = 0.54 ug/l
Dilution factor = 7.44
Effluent limitation for dissolved lead = 7.44 * 0.54 ug/l = 4.02 ug/l
Effluent limitation for total recoverable lead = 4.02/0.993 = 4.04 ug/l*

The monthly average water quality based limitation for total recoverable lead is 4 ug/l.

<u>Total Recoverable Copper</u>
The water quality data for total recoverable copper for an effluent with a dilution factor 7.44 and a hardness of 25 mg/l are a maximum daily limit of 28.2 ug/l and an average monthly limit of 21.2 ug/l. The reported effluent data for total recoverable copper had a maximum daily value of 17 ug/l. This value is less than the water quality criteria and therefore a limit has not been included in the draft permit. The permittee is required to sample quarterly as is required by the Whole Effluent Toxocity protocol.

Water Quality Criteria for hardness-dependent metals:

Acute criteria (dissolved) = exp{ m_a [ln(hardness)] + b_a } (CF)
m_a = pollutant specific coefficient
b_a = pollutant specific coefficient
h = hardness
ln = natural logarithm
CF = pollutant specific conversion factor used to convert total recoverable to dissolved metal

Calculation of acute limit for copper:

m_a = 0.9422 b_a = -1.700 CF = 0.960 h = 25

Acute criteria (dissolved) = exp {0.9422 [ln (25)] + -1.700} * (0.960) = 3.64 ug/l
Dilution factor = 7.44
Effluent limitation for dissolved copper = 7.44 * 3.64 ug/l = 27.08 ug/l
Effluent limitation for total recoverable copper = 27.08/0.96 = 28.21 ug/l*

The maximum daily water quality based limitation for total recoverable copper is 28.2 ug/l

Chronic criteria (dissolved) = exp{ m_c [ln(hardness)] + b_c } (CF)
m_c = pollutant specific coefficient
b_c = pollutant specific coefficient
h = hardness
ln = natural logarithm
CF = pollutant specific conversion factor used to convert total recoverable to dissolved metal
Calculation of chronic limit for copper:

m_c = 0.8545 b_c = -1.702 CF = 0.960 h = 25

Chronic criteria (dissolved) = exp {0.8545 [ln (25)] + -1.702} * (0.960) = 2.74 ug/l
Dilution factor = 7.44
Effluent limitation for dissolved copper = 7.44 * 2.74 ug/l = 20.38ug/l
Effluent limitation for total recoverable copper = 20.38/0.96 = 21.2 ug/l*

The monthly average water quality based limitation for total recoverable copper is 21.2 ug/l.

G. Whole Effluent Toxicity

EPA's **Technical Support Document for Water Quality Based Toxics Control,** EPA/505/2-90-001, March 1991, recommends using an "integrated strategy" containing both pollutant (chemical) specific approaches and whole effluent (biological) toxicity approaches to control toxic pollutants in effluent discharges from entering waters of the U.S.EPA-New England adopted this "integrated strategy" on July 1, 1991, for used in permit development and issuance. These approaches are designed to protect aquatic life and human health. Pollutant specific approaches such as those in the Gold Book and State Regulations address individual chemicals, whereas whole effluent toxicity (WET) approaches evaluate interactions between pollutants thus rendering and "overall" or "aggregate" toxicity assessment of the effluent. Furthermore, WET measures the "additive" and/or "antagonistic" effects of individual chemical pollutants which pollutant specific approaches do not, thus the need for both approaches. In addition, the presence of an unknown toxic pollutant can be discovered and addressed through this process.

Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts and New Hampshire law states that, "all waters shall be free from toxic substances or chemical constituents in concentrations or combination that injure or are inimical to plants, animals, humans, or aquatic life; ...." (NH RSA 485-A:8, VI and the NH Code of Administrative Rules, PART Env-Ws 1703.21). The federal NPDES regulations at 40 CFR §122.44(d)(1)(v) require whole effluent toxicity limits in a permit when a discharge has a "reasonable potential" to cause or contribute to an excursion above the State's narrative criteria for toxicity. Inclusion of the whole effluent toxicity limit in the draft permit will demonstrate the compliance with narrative water quality

criteria of “no toxics in toxics amounts” found in both the CWA and State of New Hampshire regulations.

The current policy of EPA New England is to require toxicity testing in all municipal permits. The type of whole effluent toxicity test (acute and/or chronic) and effluent limitation (LC50 and/or C-NOEC) are based on available dilution. The draft permit contains an LC50 limit of 100 percent and a C-NOEC limit of 13.4 percent. Toxicity testing shall be performed in the third quarter of each year (i.e. July, August, September) and the results shall be submitted to EPA and the NHDES-WD by the 15th day of the month following the end of the quarter sampled.

If toxicity recurs, monitoring frequency and testing requirements may be increased. The permit may also be modified, or alternatively revoked and reissued, to incorporate additional toxicity testing requirements or chemical specific limits. These actions will occur if the Regional Administrator determines the NH standards are not adequately enforced and users of the receiving water are not adequately protected during the remaining life of the permit. Results of these toxicity testes are considered “new information not available at the permit development”, therefore, the permitting authority is allowed to use said information to modify and issued permit under authority in 40 C.F.R. §122.62(a)(2).

H. Operation and Maintenance

Regulations regarding proper operation and maintenance are found at 40 CFR § 122.41(e). These regulations require, "that the permittee shall at all times operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit." The treatment plant and collection system are included in the definition “facilities and systems of treatment and control” and are therefore subject to proper operation and maintenance requirements.

Similarly, permittees have a “duty to mitigate” pursuant to 40 CFR §122.41(d). This requires the permittees to “take all reasonable steps to minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely affecting human health or the environment.”

General requirements for proper operation and maintenance, and mitigation have been included in Part II of the permit. Specific permit conditions have also been included in Part I.B, I.C and I.D of the Draft Permit. These requirements include reporting of unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventative maintenance, controlling inflow and infiltration to the extent necessary to prevent SSOs and I/I related effluent violations at the wastewater treatment plant, and maintaining alternate power where necessary.

Because the Town of New London owns and operates a collection systems that discharges to Sunapee treatment plant, the Town of New London has been included as a co-permittee for the specific permit requirements discussed in the paragraph above.

I. Industrial Users (Pretreatment Program)

The permittee is presently not required to administer a pretreatment program based on the authority granted under 40 CFR §122.44 (j), 40 CFR §403 and Section 307 of the Act. However, the draft permit contains conditions that are necessary to allow EPA and the State of New Hampshire to ensure that pollutants from industrial users will not pass through the facility and cause water quality standards violations and/or sludge use and disposal difficulties or cause interference with the operation of the treatment facility.

The permittee is required to notify EPA and the State of New Hampshire whenever a process wastewater discharge to the facility from a primary industrial category is planned, (See 40 CFR §122 Appendix A for list) or if there is any substantial change in the volume or character of pollutants being discharged into the facility by a source that was discharging at the time of issuance of the permit. The permit also contains the requirements to: (1) report to the EPA and New Hampshire Department of Environmental Services the name(s) of all Industrial Users subject to Categorical Pretreatment Standards under 40 CFR §403.6 and 40 CFR Chapter I, Subchapter N (Parts 405-415, 417-436, 439-440, 443, 446-447, 454-455, 457-461, 463-469, and 471 as amended) who commence discharge to the Publicly Owned Treatment Work after the effective date of the finally issued permit, and (2) submit to EPA and New Hampshire Department of Environmental Services copies of Baseline Monitoring Reports and other pretreatment reports submitted by industrial users.

J. Sludge Conditions

Section 405(d) of the CWA requires that EPA develop technical standards regulating the use and disposal of sewage sludge. These regulations were signed on November 25, 1992, published in the Federal Register on February 19, 1993, and became effective on March 22, 1993. Domestic sludge which is land applied, disposed of in a surface disposal unit, or fired in a sewage sludge incinerator are subject to Part 503 technical standards. Part 503 regulations have a self implementing provision, however, the CWA requires implementation through permits. Domestic sludge which is disposed of in a municipal solid waste landfill is in compliance with Part 503 regulations provided that the sludge meets the quality criteria of the landfill and the landfill meets the requirements of 40 C.F.R. Part 258.

The draft permit requires that sewage sludge use and disposal practices meet Section 405(d) Technical Standards of the CWA. In addition, the EPA Region I – NPDES Permit Sludge Compliance Guidance document dated November 4, 1999 is included with the draft permit for use by the permittee in determining their appropriate sludge conditions for their chosen method of sludge disposal. The permittee is required to submit to EPA and to NHDES-WD annually, by February 19th, the various sludge reporting requirements as specified in the guidance document for the chosen method of sludge disposal.

The Sunapee Wastewater Treatment Facility currently transports its sludge to Concord, NH for disposal.

K. Essential Fish Habitat and Endangered Species

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104267), established a new requirement to describe and identify (designate) “essential fish habitat” (EFH) in each federal fishery management plan. Only species managed under a federal fishery management plan are covered. Fishery Management Councils

determine which area will be designated as EFH. The Councils have prepared written descriptions and maps of EFH, and include them in fishery management plans or their amendments. EFH designations for New England were approved by the Secretary of Commerce on March 3, 1999.

The 1996 Sustainable Fisheries Act broadly defined EFH as "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties. Substrate includes sediment, hard bottom, and structures underlying the waters. Necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. Spawning, breeding, feeding, or growth to maturity covers all habitat types utilized by a species throughout its life cycle. Adversely affect means any impact which reduces the quality and/or quantity of EFH. Adverse impacts may include direct (i.e. contamination, physical disruption), indirect (i.e. loss of prey), site specific or habitat wide impacts including individual, cumulative, or synergistic consequences of actions.

According to the National Marine Fisheries Service (NMFS), the Sugar River is EFH for Atlantic salmon (*Salmo salar*). The NH Department of Fish and Game stocks a five mile stretch of the Sugar River annually with approximately 150,000 fry. This stretch of river is located downstream of the discharge from the Sunapee WWTF. Within the 5 mile stretch where the stocking takes place there are 2,452 units of Atlantic salmon rearing habitat (1 unit = 100 m^2). In addition to the stocking of Atlantic salmon the NHDFG also stocks the Sugar River with brown, brook, and rainbow trout.

EPA has concluded that the limits and conditions contained in the draft permit minimize adverse effects to EFH for the following reasons:

- The permit required quarter toxicity testing to ensure that the discharge does not present toxicity problems.
- The permit prohibits the discharge to cause a violation of state water quality standards.

EPA believes the draft permit adequately protects EFH and therefore additional mitigation is not warranted. NMFS will be notified and an EFH consultation will be reinitiated if adverse impacts to EFH are detected as a result of this permit action or if new information is received that changes the basis for these conclusions.

Endangered Species

The Endangered Species Act (16 U.S.C. 1451 et seq), Section 7, requires the EPA to ensure, in consultation with the U.S. Fish and Wildlife Service (USFWS) and/or NMFS, as appropriate, that any action authorized by EPA is not likely to jeopardize the continued existence of any endangered or threatened species, or adversely affect its critical habitat**.**

USFWS was contacted to determine whether or not threatened or endangered species are present in the Sugar River and no species are present.

V. ANTIDEGRADATION

This draft permit is being reissued with limitation that are the same or more stringent than those in the current permit with no change in the outfall location. The State of New Hampshire has indicated that there is no lowering of water quality and no loss of existing water uses and that no additional antidegradation review is warranted at this time.

VI. STATE CERTIFICATION REQUIREMENTS

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the permit are stringent enough to assure, among other things, that the discharge will not cause the receiving water to violate State Water Quality Standards or waives its right to certify as set forth in 40 CFR § 124.53.

Upon public noticing of the draft permit, EPA is formally requesting that the State's certifying authority make a written demonstration concerning certification. The State will be demed to have waived its right to certify unless certification is received within 60 days of receipt of this request.

THE NHDES-WD, Wastewater Engineering Bureau is the certifying authority. EPA has discussed this draft permit with the staff of the Wastewater Engineering Bureau and expects that the draft permit will be certified. Regulations governing state certification are set forth in 40 CFR §§ 124.53 and 124.55.

The State's certification should include the specific conditions necessary to assure compliance with applicable provisions of the CWA, Sections 208(e), 301, 302, 303, 306, and 307 and with appropriate requirements of State law. In addition, the State should provide a statement of the extent to which each condition of the draft permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition. These less stringent conditions may be established by EPA during the permit issuance process based on information received following the public notice of the draft permit. If the State believes that any conditions more stringent than those contained in the draft permit are necessary to meet the requirements of either the CWA or State law, the State should include such conditions and, in each case, cite the CWA or State law reference upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition.

Reviews and appeals of limitations and conditions attributable to State Certification shall be made through the applicable procedures of the State and may not be made through the applicable procedures set forth in 40 C.F.R. Part 124.

VII. Comment Period, Hearing Requests, and Procedures for Final Decisions.

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period to:

Michele Cobban Barden
NPDES Municipal Permit Branch
Office of Ecosystem Protection
U.S. Environmental Protection Agency
One Congress Street
Suite 1100 (Mail Code CMP)
Boston, Massachusetts 02114-2023
Telephone: (617) 918-1539
Fax: (617) 918-0539

Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such Requests shall state the nature of the issue proposed to be raised at the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after a public hearing (if applicable), the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the final permit decision, any interested person may submit a request for a formal hearing to reconsider or contest the final decision. Requests for a formal hearing must satisfy the requirement of 40 C.F.R. §124.74.

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays.

December 18, 2006
Date

Linda M. Murphy, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency